VIRAL DETECTION METHOD USING VIRAL ENCODED ENZYMES AND CHEMILUMINESCENT SUBSTRATES

ABSTRACT

A chemiluminescent system for detecting the presence of influenza virus in a biological fluid sample is provided. An influenza diagnostic kit is provided which includes (1) a sampling device for obtaining the biological fluid from a subject, (2) a chemiluminescent substrate material which, in the presence of influenza virus in the biological sample, will generate a chemiluminescent product that will produce detectable light, and (3) a means for detecting any generated light. A liquid sample containing the biological fluid, and preferably a diluent, are contacted with the an absorbent material containing the chemiluminescent substrate material. The substrate responds to neuraminidase activity intrinsic to influenza A and influenza B virus particles, such that when the substrate is in contact with influenza virus, the substrate is cleaved to yield a chemiluminescent product that then decomposes to produce light which can then be detected. The chemiluminescent substrate materials include enzymatically triggerable 1,2-dioxetane derivatives of 4-alkoxy-N-acetylneuraminic acid and 4,7-dialkoxy-N-acetylneuraminic acid. The system is sufficiently simple that it can reliably be used by a layperson in a nonmedical setting. The biological fluid generally originates from the oral cavity, the pharyngeal cavity, or the nasopharyngeal cavity.